UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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November 1, 1989

Performance Audit Inspection (PAI) - Pennwalt Corporation, Wyandotte, Michigan (MI0002381, AFE102:07)

Arthur S. Gedeon, Environmental Scientist
THRU: A. R. Winklhofer, Chief, EDO

Compliance Tracking Unit, 5WQC
ATTN: Susanne Buthman

A PAI was performed at the Pennwalt Corporation laboratory on June 28, 1989. The inspection was requested to determine the cause of unacceptable DMR-QA 008 results reported for biochemical oxygen demand (BOD_5), total suspended solids, and total zinc.

The laboratory evaluation covered the following functional areas: (1) laboratory organization; (2) personnel qualifications; (3) laboratory facilities; (4) analytical methodology; (5) sample holding times and preservation; (6) quality control measures; (7) data handling including correlation of bench data with the plant's self-monitoring operating reports; (8) contract laboratory analyses, and (9) check sample results.

No laboratory deficiencies were uncovered which should affect the validity of the values reported under the NPDES program. Check samples left with the permittee as part of this PAI were analyzed accurately. The Pennwalt Corporation laboratory staff were very cooperative and receptive to suggestions for improvement throughout the performance audit inspection.

A detailed narrative report including a completed EPA Form 3560-3 and appropriate checklist is attached. If there are any questions concerning this report, please contact the writer at FTS 942-7260.

Attachments

ASG/cam:10/31/89

CONCURRENCES								
SYMBOL	EDO							
SURNAME	Gedeon	[illegible]	[illegible]					
DATE	11/1/89	11/1/89	11/1/89					

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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 5
ENVIRONMENTAL SCIENCES DIVISION
EASTERN DISTRICT OFFICE
WESTLAKE, OHIO

PERFORMANCE AUDIT INSPECTION

I. PERMITTEE IDENTIFICATION

A. Facility Name and Address:

Pennwalt Corporation
4655 Biddle Avenue
Wyandotte, Michigan 48912

B. NPDES Permit No.: MI0002381

C. Date of Issuance: September 15, 1988

D. Date of Expiration: October 1, 1992

E. Receiving Waters: Detroit River Trenton Channel

F. Responsible Official:

Frank Dimaggio

II. DATE OF INSPECTION

June 28, 1989

III. PARTICIPANTS

A. U.S. Environmental Protection Agency

Arthur S. Gedeon, Environmental Scientist-Region 5

B. Michigan Department of Natural Resources

Hae-Jin Yoon, Environmental Quality Analyst

C. Pennwalt Corporation

Thomas M. Ray, Manager, Environmental Affairs
Lionel W. Monette, Supervisor, Laboratories
Thomas Overgaard, Supervisor of Chemists
Eric Parker, Wastewater Analyst

IV. OBJECTIVE

The purpose of this inspection was to determine the causes of unacceptable DMR-QA 008 results for BOD_5, total suspended solids, and total zinc.

V. SUMMARY OF FINDINGS AND CONCLUSIONS

- No laboratory deficiencies could be found which would explain the unacceptable DMR-QA 008 results.
- Data generated by this permittee for the NPDES program should be considered accurate and valid due to the acceptability of the laboratory methodology and quality control procedures.
- The permittee currently has no accurate means to measure effluent flow (as required by permit). Metered influent flows are being reported as effluent flows.

VI. PLANT INSPECTION

A brief inspection was made of the plant. All monitoring points described in the permit were visited. Sampling points, sampling equipment, and flow measuring devices were inspected. The effluent from the treatment system (001) was clear and free of floating and suspended matter.

Deficiency: The permittee is not measuring effluent flow as required by permit. The influent water is metered daily and reported as effluent flow.

Corrective Measure: The permittee should make every endeavor to correct this situation as soon as possible. The daily influent flow to the chemical plant may not be representative of the effluent from the wastewater treatment system for the same 24-hour period due to the flow-through times involved.

VII. LABORATORY EVALUATION

A. Organization

Most NPDES analyses are performed by the water laboratory of the Organic Divsion of the Pennwalt Corporation. The only exceptions to this are the total metals (zinc) analysis being performed by the Organic Division's Research and Development laboratory and speciality organics (including phenol) which are contracted to York Labs of Chicago, Illinois.

B. Personnel

Several persons were interviewed who are responsible for generating the NPDES monitoring data:

Mr. Lionel Monette, Supervisor, Laboratories;
Mr. Thomas Overgaard, Supervisor of Chemists; and
Mr. Eric Parker, Wastewater Analyst.

All personnel were very knowledgeable and experienced in wastewater analysis and quality control procedures.

Deficiency: None

C. Laboratory Facilities

The water and R & D laboratory facilities have more than adequate space and utilities for the analysis of the NPDES samples.

Deficiency: None

D. Equipment and Instrumentation

All equipment and instruments used for wastewater analyses were found to be more than adequate.

Deficiency: None

E. Methodology

No problems could be found in any of the methodologies used for NPDES sample analysis. One minor problem was pointed out to the laboratory, that of the total suspended solids' oven temperature of 107°C, which was immediately corrected. The laboratory was aware that the proper oven temperature was 103°-105°C.

Deficiency: None

F. Sample Holding Times and Preservation

All samples are preserved and analyzed within USEPA-recommended holding times. Composite samples are kept refrigerated during the compositing period.

Deficiency: None

G. Quality Control

The Pennwalt Corporation laboratory has a fine quality assurance program. Routine analysis of duplicates, standard curves, and QC check samples is employed. Statistically generated control charts are used to tell when data is out of control.

Deficiency: None

H. Data Handling

Data generated by the water and R & D laboratories for the NPDES program are stored in a computer by the analysts. A print-out is generated upon completion of the monthly analyses which is checked by the laboratory quality control coordinator, Mr. Lionel Monette. Once the data has been checked it is sent the state of Michigan. A random comparison of the laboratory data with the monthly operating reports sent to the Michigan DNR was made. The values agreed perfectly.

Deficiency: None

I. Check Sample Results

Since no methodology or quality control deficiencies were uncovered, the unacceptable DMR-QA 008 values may be attributable to analyst error. The most probable cause of unacceptable values for the BOD_5 and total suspended solids may be a simple dilution or calculation error since reported values were approximately one-half of the true values. The zinc standard curve normally analyzed by the laboratory uses 100 ppb as the highest standard. Since the DMR-QA 008 check sample was beyond this normal standard curve by over 500 ppb, a new standard curve was constructed using higher zinc concentrations. Analyst unfamiliarity with the characteristics of the higher concentration standard curve could explain the inaccurate results. A zinc check sample was left at the laboratory as part of this PAI with instructions to dilute the sample to fall within the normal standard curve range. The excellent result is shown in the table below along with the results for a BOD_5 and total suspended solids check samples.

Analyte	True Value	Reported Value	Acceptability
BOD_5 (mg/L)	19.8	20.5	Acceptable
Total Suspended Solids (mg/L)	52.3	47.5	Acceptable
Total Zinc (ug/L)	201	201.6	Acceptable